Understanding the isotope dependence of the L-H transition power threshold P_{LH} is important for predicting auxiliary power requirements for burning plasma experiments. In particular, minimising P_{LH} is crucial for robust H-mode access during ITER PFPO-1 hydrogen operations. ITER-similar-shape (ISS) hydrogen sand deuterium plasmas show characteristic differences in edge stability, turbulence correlations, shear layer properties, and calculated quasilinear turbulent fluxes. Recent dedicated DIII-D experiments in low collisionality, low-torque ISS hydrogen plasmas (q_{95} ~3.6) show significant additional edge electron power loss, in addition to increased ion heat flux [Q_i(H) ~ 2×Q_i(D)] prior to the L-H transition. This results in a power threshold significantly above the 2008 ITPA scaling [P_{LH}(H) > 2$P_{LH\text{-}08}$(H)]. ISS hydrogen plasmas with increased edge safety factor q_{95} ~5 exhibit a significantly lower power threshold, suggesting that ITER H-mode access may be eased during current ramp-up. P_{LH} can be reduced substantially (~25-30%) via Helium trace admixtures ($n_{He}/n_e \leq$ 25%), and via applied non-resonant magnetic perturbations, producing localised edge counter-current torque and increased $\boldsymbol{E}\times\boldsymbol{B}$ shear via the ion Neoclassical Toroidal Viscosity. These results contrast with the increased L-H power threshold observed with applied n=3 *Resonant* Magnetic Perturbations, ascribed to island overlap, edge stochastization, and reduced Reynolds stress. Recent MARS-F simulations indicate that substantial counter-current NTV torque may be produced in ITER PFPO-1 L-mode edge plasmas via optimised phasing of the ITER 3-D coil set.